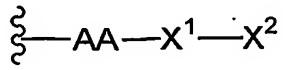
What is claimed:

1. A cell-free, in vitro method of remodeling a peptide comprising poly(ethylene glycol), the peptide having the formula:



wherein

AA is a terminal or internal amino acid residue of the peptide;

$X^1$-$X^2$ is a saccharide covalently linked to the AA, wherein

$X^1$ is a first glycosyl residue; and

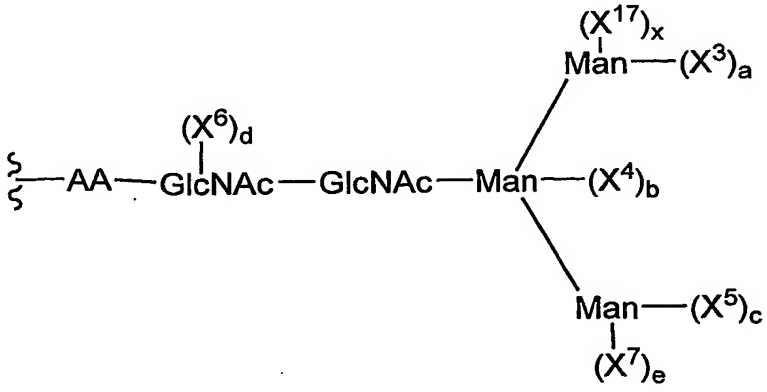
$X^2$ is a second glycosyl residue covalently linked to $X^1$, wherein $X^1$ and $X^2$ are selected from monosaccharyl and oligosaccharyl residues;

the method comprising:

(a) removing $X^2$ or a saccharyl subunit thereof from the peptide, thereby forming a truncated glycan.

2. The method according to claim 1 wherein said truncated glycan is formed by removing a Sia residue.

3. The method according to claim 1 wherein said peptide has the formula:




wherein

$X^3$, $X^4$, $X^5$, $X^6$, $X^7$, and $X^{17}$ , are independently selected monosaccharyl or oligosaccharyl residues; and

a, b, c, d, e, and x are independently selected from the integers 0, 1 and 2.

4. The method according to claim 3 wherein said oligosaccharyl residue is a member selected from GlcNAc-Gal-Sia and GlcNAc-Gal.

5. The method according to claim 3 wherein at least one member selected from a, b, c, d, e and x is 1 or 2.

6. The method of claim 3, wherein said removing of step (a) produces a truncated glycan in which at least one of a, b, c, e and x are 0.

7. The method of claim 6, wherein $X^3$, $X^5$ and $X^7$ are members independently selected from $(mannose)_z$ and $(mannose)_z$-$(X^8)$

wherein

$X^8$ is a glycosyl moiety selected from mono- and oligo-saccharides; and

z is an integer between 1 and 20, wherein

when z is 3 or greater, each $(mannose)_z$ is independently selected from linear and branched structures.

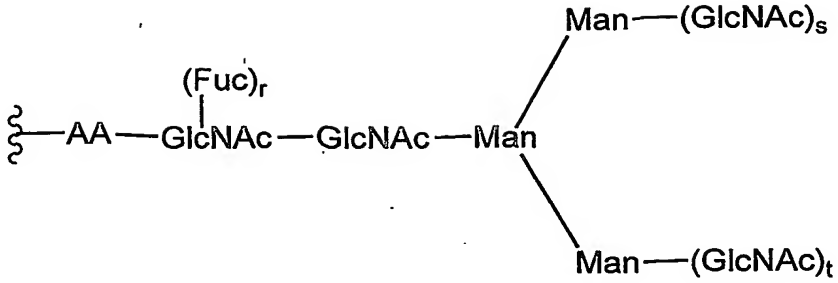
8. The method of claim 6 wherein $X^4$ is selected from the group consisting of GlcNAc and xylose.

9. The method of claim 6, wherein $X^3$, $X^5$ and $X^7$ are $(mannose)_u$

wherein

u is selected from the integers between 1 and 20, and when u is 3 or greater, each $(mannose)_u$ is independently selected from linear and branched structures.

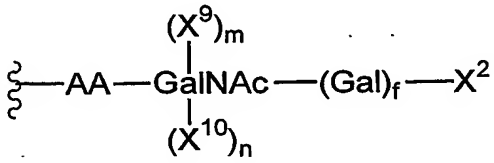
10. The method according to claim 3 wherein said peptide has the formula:




wherein

r, s, and t are integers independently selected from 0 and 1.

11. The method of claim 1, wherein said peptide has the formula:

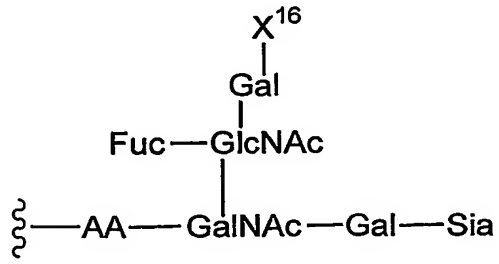



wherein

$X^9$ and $X^{10}$ are independently selected monosaccharyl or oligosaccharyl residues; and

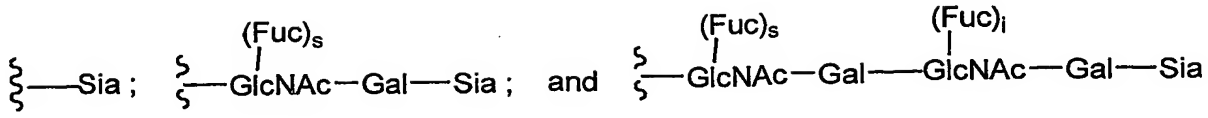
m, n and f are integers independently selected from 0 and 1.

12. The method of claim 11, wherein said peptide has the formula:




wherein

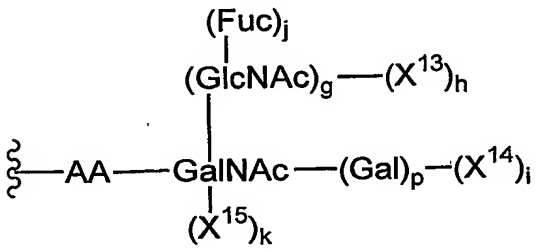
$X^{16}$ is a member selected from:




wherein

s and i are integers independently selected from 0 and 1.

13. The method of claim 12, wherein said peptide has the formula:




wherein

$X^{13}$, $X^{14}$, and $X^{15}$ are independently selected glycosyl residues; and

g, h, i, j, k, and p are independently selected from the integers 0 and 1

14. The method according to claim 13 wherein at least one of g, h, i, j, k and p is 1.

15. The method of claim 13, wherein

$X^{14}$ and $X^{15}$ are members independently selected from GlcNAc and Sia; and

i and k are independently selected from the integers 0 and 1.

16. The method according to claim 15 wherein at least one of i and k is 1, and if k is 1, g, h, and j are 0.

17. The method according to claim 1, further comprising:

(b) contacting the truncated glycan with at least one glycosyltransferase and at least one glycosyl donor under conditions suitable to transfer the at least one glycosyl

donor to the truncated glycan, thereby remodeling said peptide comprising poly(ethylene glycol).

18. The method according to claim 17 wherein said glycosyl donor comprises a modifying group covalently linked thereto.

19. The method of claim 1, further comprising:

(c) removing $X^1$, thereby exposing AA.

20. The method according to claim 19, further comprising:

(d) contacting AA with at least one glycosyltransferase and at least one glycosyl donor under conditions suitable to transfer said at least one glycosyl donor to AA, thereby remodeling said peptide comprising poly(ethylene glycol).

21. The method according to claim 20 wherein said at least one glycosyl donor comprises a modifying group covalently linked thereto.

22. The method according to claim 21 wherein said modifying group is poly(ethylene glycol).

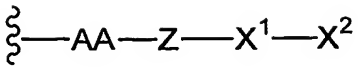
23. The method according to claim 22 wherein said poly(ethylene glycol) has a molecular weight distribution that is essentially homodisperse.

24. The method of claim 17, further comprising:

(e) prior to step (b), removing a group added to said saccharide during post-translational modification.

25. The method of claim 24 wherein said group is a member selected from phosphate, sulfate, carboxylate and esters thereof.

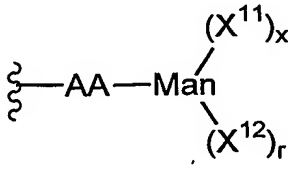
26. The method of claim 1 wherein said peptide has the formula:



wherein

Z is a member selected from O, S, NH and a cross-linker.

27. The method of claim 1, wherein said peptide has the formula:



wherein

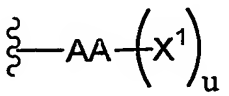
$X^{11}$ and $X^{12}$ are independently selected glycosyl moieties; and

r and x are integers independently selected from 0 and 1.

28. The method of claim 27, wherein $X^{11}$ and $X^{12}$ are $(mannose)_q$, wherein q is selected from the integers between 1 and 20, and when q is three or greater, $(mannose)_q$ is selected from linear and branched structures.

29. A pharmaceutical composition comprising a pharmaceutically acceptable diluent and a remodeled peptide according to claim 1.

30. A cell-free, in vitro method of remodeling a peptide comprising poly(ethylene glycol), said peptide having the formula:



wherein

AA is a terminal or internal amino acid residue of said peptide;

$X^1$ is a glycosyl residue covalently linked to said AA, selected from monosaccharyl and oligosaccharyl residues; and

u is an integer selected from 0 and 1,

said method comprising:

contacting said peptide with at least one glycosyltransferase and at least one glycosyl donor under conditions suitable to transfer said at least one glycosyl donor to said truncated glycan, thereby remodeling said peptide.

31. The method according to claim 30 wherein said at least one glycosyl donor comprises a modifying group covalently linked thereto.

32. The method according to claim 30 wherein said modifying group is poly(ethylene glycol).

33. The method according to claim 32 wherein said poly(ethylene glycol) has a molecular weight distribution that is essentially homodisperse.

34. A pharmaceutical composition comprising a pharmaceutically acceptable diluent and a remodeled peptide according to claim 30.